DOCUMENT RESUME

ED 217 276 CE 032 912

TITLE	Sketching. Pre-Apprenticeship Phase 1 Training.
INSTITUTION	Lane Community Coll., Eugene, Oreg.
SPONS AGENCY	Employment and Training Administration (DOL), Washington, D.C.; Oregon State Dept. of Education, Salem.
PUB DATE	79
NOTE	13p.; For related documents see CE 032 866-930 and ED 213 887-905.
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Behavioral Objectives; *Blueprints; *Drafting; Graphic Arts; Individual Instruction; Learning Modules; Pacing; Postsecondary Education; Secondary Education; Tests; *Trade and Industrial Education; Two Year Colleges
IDENTIFIERS	*Preapprenticeship Programs; *Sketching

ABSTRACT

This self-paced student training module on sketching is one of a number of modules developed for Pre-apprenticeship Phase 1 Training. Purpose of the module is to teach students the elements of and reasons for sketching as an essential aid to understanding blueprints. The module may contain some or all of the following: a cover sheet listing module title, goal, and performance indicator; study guide/checklist with directions for module completion; introduction; information sheets providing information and graphics covering the module topic(s); self-assessment; self-assessment answers; post assessment; and post-assessment answers. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED217276

INDIVIDUALIZED LEARNING SYSTEMS

PRE-APPRENTICESHIP PHASE 1 TRAINING

SKETCHING

Goal:

The student will learn the elements of and reasons for sketching as an essential aid to understanding blueprints.

Performance Indicators:

The student will successfully complete a Self Assessment and a Post Assessment exam and will make assigned free-handed sketches.

CE032912

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

C. Horstrup

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

© Copyright 1979, Oregon Department of Education

Study Guide

For successful completion of this module, complete the tasks in the order listed below. Check each one off as you complete it.

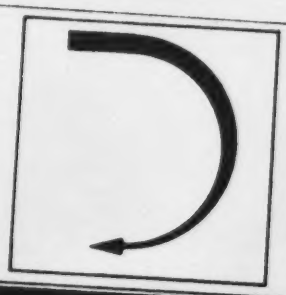
1. ____ Read the Goal and Performance Indicators on the cover of this module. This will explain what you can be expected to learn from the module and how you will demonstrate it.

2. ____ Read the Introduction section and study the Information section. In these sections you will acquire the knowledge necessary to pass the Self and Post Assessment exams.

3. ____ Complete the Self Assessment exam. This will show how well you can expect to do on the Post Assessment exam. Compare your answers with those on the Self Assessment Answer Sheet found immediately following the exam. If you scored poorly, re-study the Information section or ask your instructor for help.

4. ____ Complete the Post Assessment exam. Turn the answers in to your instructor. It is recommended you score 90% or better before continuing with the next module.

Introduction



For the skilled worker, the importance of being able to make quick, clear and accurate sketches cannot be overemphasized. Most mechanical and architectural ideas are expressed better by means of a sketch than by a verbal description. In general, once a technical problem has been put down as a picture, it is more clearly defined and its complications become more obvious. In some instances, sketches may take the place of regular working drawings; for example, a shop sketch made by the foreman or a journeyman may be the only drawing for a small job that is to be done in the shop.

In learning to sketch, the apprentice will not only acquire a needed job skill; he or she will also develop the ability to observe things more critically. Making an accurate sketch of an object requires that all its details and parts relationships be carefully studied and clearly understood.

Information

USES OF SKETCHES

The degree of perfection and the amount of detail required in a given sketch depends upon its intended use. Sketches made to organize ideas, or to develop or formulate various solutions to a given problem, may be rough or incomplete. An architect's quickly drawn preliminary floor plan, showing his or her ideas for room arrangement, is a good example of such a rough sketch. On the other hand, sketches intended for communicating important information in a precise way should be very carefully done. An example of this would be a detail sketch developed from an existing drawing, possibly to show necessary changes in construction or to give detailed information about size, materials, and installation.

MATERIALS FOR SKETCHING

The materials required for making sketches are few--usually only a pencil, some paper, and an eraser. The pencil should have a rather soft lead--a No. 2 in the ordinary pencil series or an HB or F in the drafting pencil series. End views of various drafting pencils, ranging from the very hard 9G to the very soft 7B, are illustrated in Fig. F-8. The harder drafting pencils are used where high accuracy is required; medium pencils are used for general sketching and lettering; and the softer pencils are used for making large freehand drawings. (Coordinate paper, which has crossed lines or grids, is helpful to the beginner; the grids may be used as guides for drawing lines and keeping proportions. The grids of such paper are either rectangular or isometric. (See Fig. F-9.)

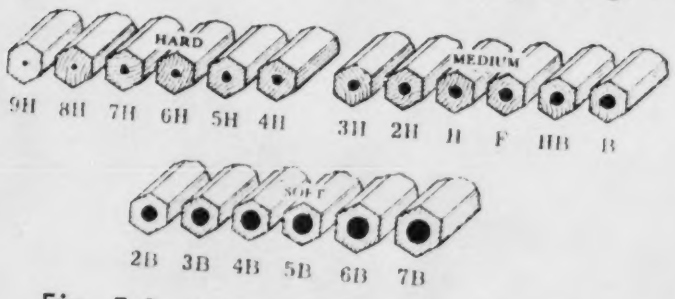


Fig. F-8. Hard, medium & soft drafting pencils

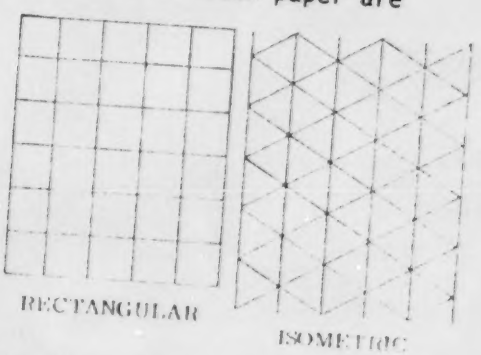


Fig. F-9. Grids of coordinate paper

SIZE AND PROPORTIONS OF SKETCHES

In general, sketches are not made to any scale, but they should be as nearly in proportion as possible. Before a sketch can be started, the overall dimensions of the object to be drawn must be known; the size of the sketch can then be planned in accordance with the area available for it on the paper. When the desired size for the sketch has been determined, the proportions can be worked out from the dimensions of the object. In working out proportions, it is helpful to ask oneself questions like these: How many times greater is the height than the width (or vice-versa) of the object? If the object has openings, are their height and width greater then the spaces between them?

SKETCHING PROCEDURES AND TECHNIQUES

The term "sketch" is often misunderstood to mean a vague, crude drawing; however; if even a rough sketch is to be of any value, it must be done with reasonable care and accuracy. Speed in sketching is desirable, but the beginner should concentrate at first on developing accuracy. He or she should hold the pencil in the normal writing position, using wrist motion for sketching the shorter lines and forearm motion for the longer ones. All lines should be drawn with a free movement, without hesitation, and fairly fast.

SKETCHING LINES

A group of exercises designed to develop skill in the sketching of lines is given on the next page. In doing these exercises, the apprentice should connect the dots in each set as shown, making each line with one firm, quick stroke and keeping his or her eye on the dot toward which the pencil is moving--not on the pencil point. Short, "hairy" strokes must be avoided; the pencil should be kept in contact with the paper for the entire length of the stroke. If the resulting line looks wavy, it was probably drawn too slowly; if the line misses the dots, it was probably drawn too fast. It is good practice to go through the motion of the stroke once or twice with the pencil raised slightly off the paper before actually drawing the line; when the stroke seems to be going where it should, the pencil point can be lowered onto the paper and the final stroke made.

EXERCISES IN SKETCHING LINES

HORIZONTAL

VERTICAL

DIAGONAL

DIAGONAL

CURVED

BASIC FORMS IN SKETCHING

When you have become proficient in the freehand drawing of lines, you will be ready to try sketching the basic geometric forms--squares, rectangles, triangles, and circles--that singly or in various combinations represent the shapes of most objects.

Two simple ways to sketch rectangles or squares when the lines are parallel to the paper edge are shown in Fig. F-10. In the method illustrated at the left, points are laid out the required distance in from the paper edges, then connected with freehand pencil strokes. A strip of paper or cardboard can be marked and used as a gage for laying out the points. The method illustrated at the right can be employed if a sketching pad is being used; the pencil is held as shown, the finger-tips being used to guide the hand along the edge of the pad.

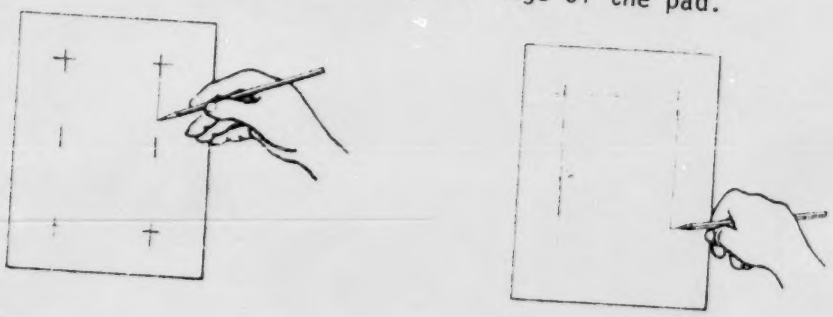


Fig. F-10. Two methods of sketching lines parallel to the paper edge

The sketching of squares, rectangles, triangles, and circles is made easier by laying them out on crosses (intersecting lines) that have been marked to provide reference points for the drawing. (See Fig. F-11.)

Circles and arcs, especially the larger ones, may also be drawn with fair accuracy by placing the tip of the little finger on the paper where the center of the circle will come, holding the pencil steady and with moderate pressure on the paper, then rotating the paper carefully. (See Fig. F-12.)

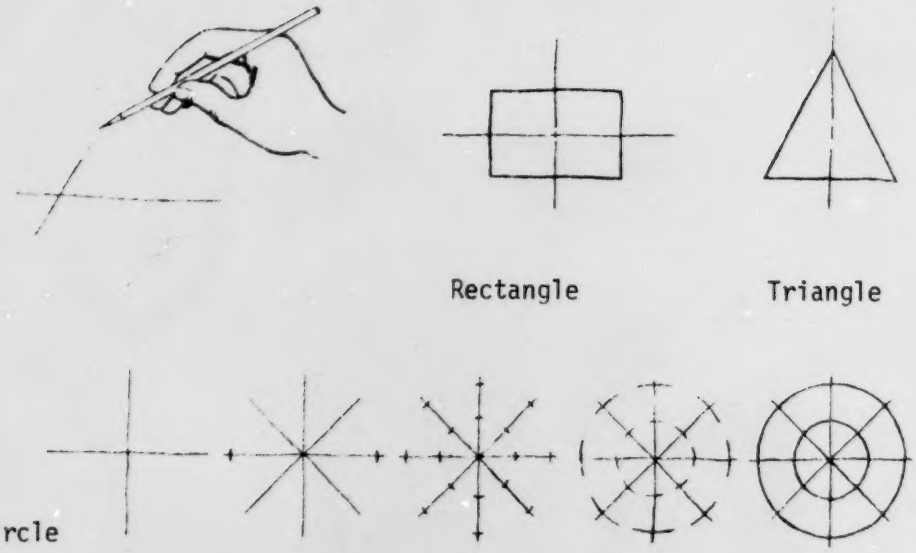


Fig. F-11. Laying out figures from center lines

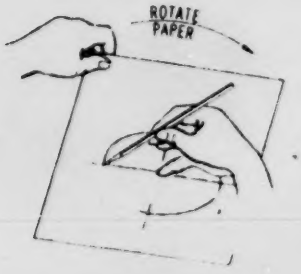
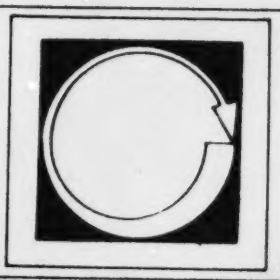


Fig. F-12. Another method of drawing a circle

Self Assessment



Read each statement and decide whether it is true or false. Write T if the statement is true; write F is the statement is false.

1. ____ Sketching an object may compel a person to change his or her opinion of it in some way.

2. ____ A sketch developed from an existing drawing to show a change in construction should be very carefully done.

3. ____ To make a good-quality line for a sketch, one should use short, overlapping pencil strokes.

4. ____ Sketches are usually made to some given scale.

5. ____ Lines are employed in sketching to represent the surfaces, edges, and contours of objects.

6. ____ Most right-handed persons find that the most natural direction for drawing horizontal lines is from left to right.

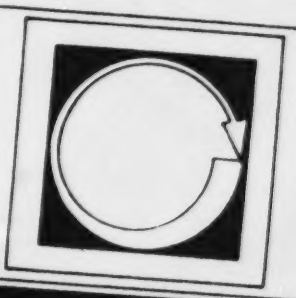
7. ____ A ruler is an essential instrument in freehand sketching.

8. ____ If the lines of a sketch are wavy, they were probably drawn too fast.

SELF ASSESSMENT ANSWER SHEET

1. T
2. T
3. F
4. T
5. T
6. T
7. F
8. F

Post Assessment



Listed below each numbered item are four possible answers or completing phrases. Decide which of the four is correct, or most nearly correct; then write the corresponding letter in the blank space to the left of that item.

1. ____ Learning to sketch develops a technical student's ability to:
   a. use drafting instruments
   b. understand verbal instructions
   c. observe things critically
   d. use the tools of his or her trade

2. ____ Which of the following combinations of materials would be best for the beginner in sketching?
   a. coordinate paper
   b. charcoal and wood
   c. unlined paper and any soft pencil having an eraser
   d. typing paper, typewriter eraser, and HB drafting pencil

3. ____ In drawing a line freehand, one should use:
   a. a series of short, overlapping strokes
   b. a straightedge if the line is over 4" long
   c. wrist motion only
   d. a single pencil stroke

4. ____ The first step in learning to sketch is to practice drawing:
   a. lines
   b. rectangles
   c. planes and contours
   d. three-dimensional forms

5. ____ Coordinate tracing paper has:
   a. no lines
   b. vertical lines only
   c. horizontal lines only
   d. crossed lines or grids

6. ____ Sketches are usually made:

a. to scale and in proportion
b. to scale but not in proportion
c. neither to scale nor in proportion
d. in proportion but not to scale

7. ____ The first step in making a sketch is to:

a. draw the lines representing the top and bottom of the object
b. draw the lines representing the sides of the object
c. determine the overall dimensions of the object
d. determine all the dimensions of the object

8. ____ The degree of perfection and the amount of detail required in a sketch depends upon the:

a. number of copies to be made
b. importance of the information given in the sketch
c. time available for sketching
d. cost of the item being sketched

9. ____ Which one of the following is essential equipment for sketching?

a. drafting instruments
b. coordinate paper
c. blueprint machine
d. soft eraser

10. ____ If a freehand-drawn line looks wavy, it probably was drawn:

a. with too soft a pencil
b. one the wrong paper
c. too rapidly
d. too slowly